

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Porro, Massimo

(ii) TITLE OF INVENTION: VACCINES FOR PREVENTION OF GRAM-  
NEGATIVE BACTERIAL INFECTIONS AND ENDOTOXIN RELATED DISEASES

(iii) NUMBER OF SEQUENCES: 45

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Hedman, Gibson & Costigan  
(B) STREET: 1185 Avenue of the Americas  
(C) CITY: New York  
(D) STATE: New York  
(E) COUNTRY: USA  
(F) ZIP: 10036

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette, 3.50 inch, 1.44 Mb storage  
(B) COMPUTER: IBM PS/2  
(C) OPERATING SYSTEM: DOS  
(D) SOFTWARE: Word Perfect 5.1

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER:  
(B) FILING DATE: July 29, 1998  
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER:  
(B) FILING DATE:

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Costigan, James V.  
(B) REGISTRATION NUMBER: 25,669  
(C) REFERENCE/DOCKET NUMBER: 576-008

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (212) 302-8989  
(B) TELEFAX: (212) 302-8998

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
1 5 10

(3) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
1 5 10  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
15 20  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
25 30

(4) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 434 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
1 5 10  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
15 20  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
25 30  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
35 40  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
45 50  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
55 60  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
65 70  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
75 80  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
85 90  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
95 100  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
105 110  
Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
115 120

0044242160  
08242160  
072998  
065270

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				125					130
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				135					140
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				145					150
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				155					160
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				165					170
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				175					180
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				185					190
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				195					200
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				205					210
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				215					220
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				225					230
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				235					240
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				245					250
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				255					260
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				265					270
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				275					280
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				285					290
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				295					300
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				305					310
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				315					320
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				325					330
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				335					340
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				345					350
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				355					360
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				365					370
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				375					380
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				385					390
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				395					400

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	405	410
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	415	420
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	425	430
Lys	Lys	Lys	Lys										

(5) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Lys	Asp	Lys	Asp	Lys	Asp	Lys	Asp	Lys	Asp	Lys	Asp	1	5	10
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(6) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Lys	Phe	Lys	Phe	Lys	Phe	Lys	Phe	Lys	Phe	Lys	Phe	1	5	10
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(7) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Lys	Phe	Leu	Lys	Lys	Thr	Leu	1	5
-----	-----	-----	-----	-----	-----	-----	---	---

(8) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:7:

004420 00242160



(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Lys Lys Lys Lys Lys Lys Phe Lys Phe Lys  
1 5 10

(14) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Cys Lys Cys Lys Cys Lys Cys Lys Cys Lys Cys  
1 5 10

(15) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Cys Lys Phe Lys Lys Cys  
1 5

(16) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Lys Phe Lys Cys Lys Phe Lys Phe Lys Cys  
1 5 10

(17) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid









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(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

Cys Lys Phe Leu Lys Lys Cys  
1 5

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

Lys Thr Lys Cys Lys Phe Leu Lys Lys Cys  
1 5 10

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

Lys Phe Leu Lys Lys Thr

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

Cys Lys Lys Leu Phe Lys Cys Lys Thr Lys  
1 5 10

(A) LENGTH: 9 amino acids



(40) INFORMATION FOR SEQ ID NO:39

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Arg Tyr Val Arg Tyr Val Arg Tyr Val

(41) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Lys Phe Phe Lys Phe Phe Lys Phe Phe

(42) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Ile Lys Phe Leu Lys Phe Leu Lys Phe Leu

(43) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Lys Lys Lys Lys Lys Lys Phe Leu Phe Leu

(44) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Cys Lys Phe Lys Phe Lys Phe Lys Phe Cys  
1 5 10

(45) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Lys Trp Lys Ala Gln Lys Arg Phe Leu Lys

(46) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Lys Arg Leu Lys Trp Lys Tyr Lys Gly Lys Phe